

What is claimed is:

1. A method for capping a Micro-Electromechanical System (MEMS) device, the method comprising:

5 forming a cap structure having a bottom side with at least a MEMS cavity, a cut capture cavity surrounding the MEMS cavity, and a cap wall, the cap wall forming an outer wall of the MEMS cavity and an inner wall of the cut capture cavity;
bonding the cap wall onto a MEMS structure; and
10 cutting through to the cut capture cavity from a top side of the cap structure to form a cap.

2. The method of claim 1, wherein forming the cap structure comprises:

15 forming the MEMS cavity and the cut capture cavity into the bottom side of the cap structure.

3. The method of claim 2, wherein forming the MEMS cavity and the cut capture cavity into the bottom side of the cap structure comprises:

20 etching the MEMS cavity and the cut capture cavity into the bottom side of the cap structure.

4. The method of claim 1, wherein forming the cap structure comprises:

25 forming the cap wall onto the bottom side of the cap structure, the cap wall forming the outside wall of the MEMS cavity and the inside wall of the cut capture cavity.

5. The method of claim 4, wherein forming the cap wall onto the bottom side of the cap structure comprises:

30 depositing a cap wall material onto the bottom side of the cap structure to

form the cap wall.

6. The method of claim 1, wherein bonding the cap wall onto the MEMS structure comprises:

applying a bonding material to a bottom side of the cap wall; and

bonding the bottom side of the cap wall onto the MEMS structure.

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7. The method of claim 6, wherein the bonding material comprises a glass material.

10 8. The method of claim 7, wherein applying the bonding material to the bottom side of the cap wall comprises:

screen printing a glass frit material onto the bottom side of the cap wall;

burning off organic compounds of the glass frit material; and

glazing the remaining glass frit material to form the glass material.

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9. The method of claim 7, wherein bonding the bottom side of the cap wall onto the MEMS structure comprises:

bonding the bottom side of the cap wall onto the MEMS structure under pressure at a temperature sufficient to melt the glass material.

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10. The method of claim 1, further comprising:

filling the cut capture cavity with a protective material prior to cutting through to the cut capture cavity from the top side of the cap structure to form the cap.

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11. The method of claim 10, wherein the protective material comprises a wax material.

12. The method of claim 10, further comprising:

removing residual protective material after cutting through to the cut capture cavity from a top side of the cap structure to form the cap.

13. The method of claim 1, wherein cutting through to the cut capture cavity
5 from the top side of the cap structure to form the cap comprises cutting through
to the cut capture cavity from the top side of the cap structure using at least one
of:

- a precision cutting technique;
- a precision grinding technique;
- 10 a laser technique; and
- an etching technique.

14. The method of claim 1, wherein the cap structure comprises a silicon
material.

15. An apparatus for capping a Micro-Electromechanical System (MEMS)
device, the apparatus comprising a bottom side with at least one MEMS cavity,
cut capture cavity surrounding the MEMS cavity, and cap wall, the cap wall
forming an outer wall of the MEMS cavity and an inner wall of the cut capture
cavity.
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16. The apparatus of claim 15, wherein the MEMS cavity and cut capture
cavity are recessed into the bottom side.

25. 17. The apparatus of claim 15, wherein the cap wall is built upon the bottom
side so as to form the outside wall of the MEMS cavity and the inside wall of the
cut capture cavity.

18. A capped Micro-Electromechanical System (MEMS) device produced by
30 the process of forming a cap structure having a bottom side with at least a MEMS

cavity, a cut capture cavity surrounding the MEMS cavity, and a cap wall, the cap wall forming an outer wall of the MEMS cavity and an inner wall of the cut capture cavity; bonding the cap wall onto a MEMS structure; and cutting through to the cut capture cavity from a top side of the cap structure to form a

cap.